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| 10/526,162 | 02/28/2005 | Isao Matsuda | P/1209-69 | 6492 |

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| EXAMINER | |
|---|---|
| HEYI, HENOK G | |

| ART UNIT | PAPER NUMBER |
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/526,162 | MATSUDA ET AL. | |
| | Examiner | Art Unit | |
| | HENOK G. HEYI | 2627 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *13 January 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 12/18/2008 have been fully considered but they are not persuasive. Applicant's argument that says the position of the recorded pits and the land pre-pits are such that at least one pair of a recorded pit and a land pre-pit are mutually adjacent in a radial direction of the optical information recording media is also taught by Matsui reference. In para [0025] and [0026] Matsui teaches that Fig. 2 shows the positions of pits and land pre-pits adjacent to each other. In regards to applicant's second argument, it is in applicant's disclosure that $L_{in}$ and $L_{out}$ are in a range of 3T and 6T where T is the length of pits and has a value of 0.134μm. This gives a range of 0.402μm – 0.804μm for $L_{in}$ and $L_{out}$. As was mentioned in previous communication, Kozuka teaches the length of pit ranges from 0.4m to 1.87μm. Applicant also argues that Yamauchi does not teach or suggest protruding length in the radial direction in the specified range. However, Yamauchi clearly discloses indented and protruding pits with radial distance of 0.74μm (see col 6 lines 40-52).

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsui JP 09-102143 A (Matsui hereinafter).

Regarding claim 1, Matsui teaches optical information recording media (Drawing 1), having: a translucent substrate on which are formed a pregroove and land pre-pits in the land portions positioned on the left and right of the pregroove; an optical recording layer, provided on the substrate, enabling recording by recording light (While being able to make the prepit 21 irradiate with a part of beams 41 and 42 for record/reproduction certainly by having made width of the groove 20 and the land 30 into 40% - 80% of the diameters of the beams 41 and 42 for record/reproduction, Width of the groove 20 and the land 30 can be narrowed, and densification of the optical disc 10 can be carried out more, para [0036]); and a light reflecting layer, provided on the optical recording layer, which reflects said recording light, and enabling recording, by irradiation of said optical recording layer with said recording light through said substrate, of information which can be read optically, the optical information recording media being characterized in that, said land pre-pits are continuous along said pregroove and are made to protrude in the radial direction of said substrate, and when e is the base of natural logarithms, then the inside edge portions of the inside protruding portion and the outside edge portions of the outside protruding portion of said land pre-pits are positioned within the range of the spot diameter in the $1/e^2$ portion of the Gaussian energy distribution of the spot due to said recording light (Gaussian beam diameter becomes $e^{-2}$, para [0027]) the positions of said recorded pits and said land pre-pits being such that at least one pair of a recorded pit and a land pre-pit are mutually adjacent in a radial direction of the optical information recording media (see para [0025] to para [0026]).

Regarding claim 2, Matsui teaches the optical information recording media

according to Claim 1, wherein said inside edge portions and said outside edge portions of said land pre-pits are positioned so as to converge toward the center position of said spot due to said recording light (said groove and said width of land can be narrowed, and densification of an optical disc can be attained, para [0022]).

Regarding claim 3, Matsui teaches the optical information recording media according to Claim 1, wherein, when for said land pre-pits $L_{in}$ is the distance between said two inside edge portions of said inside protruding portion and $L_{out}$ is the distance between said two outside edge portions of said outside protruding portion, these distances $L_{in}$ and $L_{out}$ are made smaller than said spot diameter in the $1/e^2$ portion of said Gaussian energy distribution of said spot due to said recording light (Gaussian beam diameter becomes $e^{-2}$, para [0027]).

Regarding claim 4, Matsui teaches the optical information recording media according to Claim 1, wherein, for said land pre-pits, in addition to said inside edge portions and said outside edge portions, the most prominently protruding inside edge portion of said inside protruding portion and the most prominently protruding outside edge portion of said outside protruding portion are positioned within the range of said spot diameter in the $1/e^2$ portion of said Gaussian energy distribution of said spot due to said recording light (Gaussian beam diameter becomes $e^{-2}$, para [0027]).

Regarding claim 5, Matsui teaches the optical information recording media according to Claim 1, wherein said inside edge portions and said outside edge portions of said land pre-pits are positioned within the range of the spot diameter in the 1/e

portion of said Gaussian energy distribution of said spot due to said recording light (Gaussian beam diameter becomes $e^{-2}$, para [0027]).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Kozuka et al. US 6,466,735 B1 (Kozuka hereinafter).

Regarding claims 6 and 12, Matsui teaches the optical information recording media, having: a translucent substrate on which are formed a pregroove and land pre-pits in the land portions positioned on the left and right of the pregroove; an optical recording layer, provided on the substrate, enabling recording of recorded pits by recording light (While being able to make the prepit 21 irradiate with a part of beams 41 and 42 for record/reproduction certainly by having made width of the groove 20 and the land 30 into 40% - 80% of the diameters of the beams 41 and 42 for record/reproduction, Width of the groove 20 and the land 30 can be narrowed, and densification of the optical disc 10 can be carried out more, para [0036]); and, a light reflecting layer, provided on the optical recording layer, which reflects said recording light, and enabling recording, by irradiation of said optical recording layer with said recording light through said substrate, of information which can be read optically (see para [0008]) but Matsui fails to teach the optical information recording media being

characterized in that, said land pre-pits are continuous along said pregroove and are made to protrude in the radial direction of said substrate, and when $L_{in}$ is the distance between two inside edge portions of the inside protruding portion of said land pre-pits, $L_{out}$ is the distance between two outside edge portions of the outside protruding portion of said land pre-pits, and T is the basic length representing the length of said recorded pits, these distances $L_{in}$ and $L_{out}$ are within the range 3T to 6T. However, Kozuka teaches the length of a pit ranges from 0.4 .mu.m to 1.87 .mu.m. A whole series of pits form a spiral track with a radial distance of 0.74 .mu.m between the pit lines (see col 5 lines 43-45). It would have been obvious for one skilled in the art at the time the invention was made to modify the information recording media of Matsui to include pits with radial length of the specified range. The modification would have been obvious because of the benefit of these protruding lands and prepits on the reflecting surface in adjusting reflectivity of the medium as taught by Kozuka.

Regarding claims 7-11, Kozuka teaches the length of a pit ranges from 0.4 .mu.m to 1.87 .mu.m. A whole series of pits form a spiral track with a radial distance of 0.74 .mu.m between the pit lines (see col 5 lines 43-45).

Regarding claim 13, Tetsuya teaches the optical information recording media according to Claim 12, wherein said distances Lin and Lout are such that 0.45 μm ≤ $L_{in}$ ≤ 0.50μm and 0.65 μm ≤ $L_{out}$ ≤ 0.70 μm (see col 11 lines 53-60).

Regarding claim 14, Tetsuya teaches the optical information recording media according to Claim 12, wherein said land pre-pits are formed in a meandering shape

(since wobbles are shaped with curves, col 14 lines 32-35).

5. Claims 15-19 and 21-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Kozuka et al. US 6,466,735 B1 (Kozuka hereinafter) as applied to claim 12 above, and further in view of Yamauchi et al. 6,088,507 (Yamauchi hereinafter).

Regarding claims 15, Matsui teaches the optical information recording media, having: a translucent substrate on which are formed a pregroove and land pre-pits in the land portions positioned on the left and right of the pregroove; an optical recording layer, provided on the substrate, enabling recording of recorded pits by recording light (While being able to make the prepit 21 irradiate with a part of beams 41 and 42 for record/reproduction certainly by having made width of the groove 20 and the land 30 into 40% - 80% of the diameters of the beams 41 and 42 for record/reproduction, Width of the groove 20 and the land 30 can be narrowed, and densification of the optical disc 10 can be carried out more, para [0036]); and, a light reflecting layer, provided on the optical recording layer, which reflects said recording light, and enabling recording, by irradiation of said optical recording layer with said recording light through said substrate, of information which can be read optically (see para [0008]) but Matsui fails to teach the optical information recording media being characterized in that, said land pre-pits are continuous along said pregroove and are made to protrude in the radial direction of said substrate, and when $L_{in}$ is the distance between two inside edge portions of the inside protruding portion of said land pre-pits, $L_{out}$ is the distance between two outside edge

portions of the outside protruding portion of said land pre-pits, and T is the basic length representing the length of said recorded pits, these distances $L_{in}$ and $L_{out}$ are within the range 3T to 6T. However, Kozuka teaches the length of a pit ranges from 0.4 .mu.m to 1.87 .mu.m. A whole series of pits form a spiral track with a radial distance of 0.74 .mu.m between the pit lines (see col 5 lines 43-45). It would have been obvious for one skilled in the art at the time the invention was made to modify the information recording media of Matsui to include pits with radial length of the specified range. The modification would have been obvious because of the benefit of these protruding lands and prepits on the reflecting surface in adjusting reflectivity of the medium as taught by Kozuka. Both Matsui and Kozuka fail to teach the optical information recording media being characterized in that, said land pre-pits are continuous along said pregroove and are made to protrude in an arc shape in the radial direction of said substrate, and when $R_{in}$ is the inside protruding length in the radial direction on the inside of the arc shape and $R_{out}$ is the outside protruding length in the radial direction on the outside of the arc shape, the lengths $R_{in}$ and $R_{out}$ are such that 0.120 μm ≤ $R_{in}$ ≤ 0.182 μm and 0.100 μm ≤ $R_{out}$ ≤ 0.250 μm. However, Yamauchi teaches a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm (see col 6 line 40-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the information recording media of Matsui to include land pre-pits protruding in the radial direction with the length of the pit in a specified range. The modification would have been obvious because of

the benefit of the amount of the length of the pits in information recording as taught by Yamauchi (see col 6 lines 40-52).

Regarding claim 16, Yamauchi teaches the optical information recording media according to Claim 15, wherein said lengths $R_{in}$ and $R_{out}$ are such that 0.140 μm ≤ $R_{in}$ ≤ 0.173 μm and 0.100 μm ≤ $R_{out}$ ≤ 0.192 μm (a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm, col 6 line 40-52).

Regarding claim 17, Yamauchi teaches the optical information recording media according to Claim 15 wherein said lengths $R_{in}$ and $R_{out}$ are such that $R_{in}$ ≤ $R_{out}$ (a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm, col 6 line 40-52).

Regarding claim 18, Yamauchi teaches the optical information recording media according to Claim 15, wherein said lengths $R_{in}$ and $R_{out}$ are such that 0.140 μm ≤ $R_{in}$ ≤ 0.156 μm and 0.156 μm ≤ $R_{out}$ ≤ 0.192 μm (a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm, col 6 line 40-52).

Regarding claim 19, Yamauchi teaches the optical information recording media according to Claim 15, wherein said lengths $R_{in}$ and $R_{out}$ are such that 0.120 μm ≤ $R_{in}$ ≤ 0.130 μm and 0.180 μm ≤ $R_{out}$ ≤ 0.244 μm (a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm, col 6 line 40-52).

Regarding claim 21, Kozuka teaches the optical information recording media according to Claim 15, wherein said optical recording layer comprises light absorbing material capable of absorbing said recording light.

Regarding claim 22, Matsui teaches the optical information recording media according to Claim 16, wherein said lengths $R_{in}$ and $R_{out}$ are such that $R_{in} \leq R_{out}$ (a whole series of pits form a spiral track with a radial distance of 0.74 μm between the pit lines and the length of pit ranges, from 0.4 μm to 2.13 μm, col 6 line 40-52).

6. Claim 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Matsui in view of Kozuka et al. US 6,466,735 B1 (Kozuka hereinafter) as applied to claim 12 above, and further in view of Yamauchi et al. 6,088,507 (Yamauchi hereinafter) and Inui et al. US 6,295,271 B1 (Inui hereinafter).

Regarding claim 20, Matsui, Kozuka and Yamauchi teach the optical information recording media according to Claim 15, but they all fail to teach λ is the wavelength of said recording light, the optical depth in the unrecorded state in said pregroove is from λ/8 to λ/5. However, Inui teaches that the groove depth (land height) of the optical disk substrate 205 is in the claimed vicinity, col 15 lines 5-55). It would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the optical depth of the recording media so that it will be in the specified range. The modification would have been obvious because of the benefit of maximizing signal tracking which helps stabilize disc operation as taught by Inui (see col 15 lines 13-16).

***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENOK G. HEYI whose telephone number is (571)270-1816. The examiner can normally be reached on Monday to Friday 8:30 to 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Feild can be reached on (571) 272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joseph H. Feild/
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